



FCC Multi-Party Vendor Meeting

Interoperability

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AGENDA

1. Single network vs network of networks
2. Nationwide Framework for Priority Access and QoS
3. Roaming across regions
4. Need for Standardized Applications APIs

Single Network vs. Network of Networks

- The Architecture framework is a **Critical** item
 - Eliminates uncertainty around public safety network structure
 - Eliminates market uncertainty
 - Avoid extensive reconfiguration and associated cost
 - PLMN id is embedded in many identities in LTE including IMSI, Global Unique MME Id, Global Cell Id, APN Operator Id, APN FQDN, home domain name, Tracking Area Id, ...
- For any architecture/governance option need to address
 - Network management and operations
 - Coordination with Jurisdictions
 - Distribution of Core components
- Need a resolution fast!

Single Network vs. Network of Networks

A Comparative View

	Single Network (single Operator)	Network of Networks
Roaming Complexity	Low	High
Initial Cost	\$	\$-\$\$
Cost to Manage/Operate	\$	\$\$
Ease of staying in sync with 3GPP	Easier	Harder
Number of PLMN ids	1	Multiple
Nationwide PLMN id	Implicit	Maybe
Jurisdictional Control of Subscriber Info	Yes*	Yes*
Jurisdictional Control of Policies	Yes	Yes
Secure Network Access per Jurisdiction	Yes	Yes
Local Breakout Required	No	Yes
Usage Records/Billing Allocation	Centralized	Per Region
Jurisdictions Border Interference Coordination	No	Yes

* Requires partitioned access to single HSS or diameter redirect/Subscriber Locator Function

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Nationwide Framework for Priority Access and QoS

- Using a nationwide framework provides consistent behavior/expectations when users roam into other public safety networks
- Focus should be on priority level in home versus visited network, and associated pre-emption capability/vulnerability status
 - Can differ between GBR and non-GBR bearers
- Adjusting QCI values primarily relevant to differentiate between non-GBR traffic with QCI 6, 8, and 9
- Mapping to commercial network desirable but (likely) needs to be negotiated with each individual commercial provider
- Allows individual jurisdictions to assign priorities within this framework to serve their needs

Nationwide Framework for Priority Access and QoS

Example configuration for PS LTE network

Priority	User groups		GBR Bearer		Non-GBR Bearer	
			Can Pre-empt	Vulnerable	Can Pre-empt	Vulnerable
1	1 st responder at home (A)		Yes	No	Yes	No
2	1 st responder at home (B)		Yes	No	Yes	No
3	1 st responder at home (C)		Yes	No	Yes	No
4	1 st responder at home (D)	1 st responder visiting (A)	Yes	No	Yes	No
5	1 st responder at home (E)	1 st responder visiting (B)	Yes	No	Yes	No
6	PS support at home (A)	1 st responder visiting (C)	Yes	No	No	Yes
7	PS support at home (B)	1 st responder visiting (D)	Yes	No	No	Yes
8	PS support at home (C)	1 st responder visiting (E)	Yes	No	No	Yes
9	PS support at home (D)	PS support visiting (A)	Yes	No	No	Yes
10	PS other (A)	PS support visiting (B)	No	Yes	No	Yes
11	PS other (B)	PS support visiting (C)	No	Yes	No	Yes
12	PS other (C)	PS support visiting (D)	No	Yes	No	Yes
13	PS other (D)		No	Yes	No	Yes
14	Commercial user		No	No	No	No
15	Commercial user		No	No	No	No

Roaming*

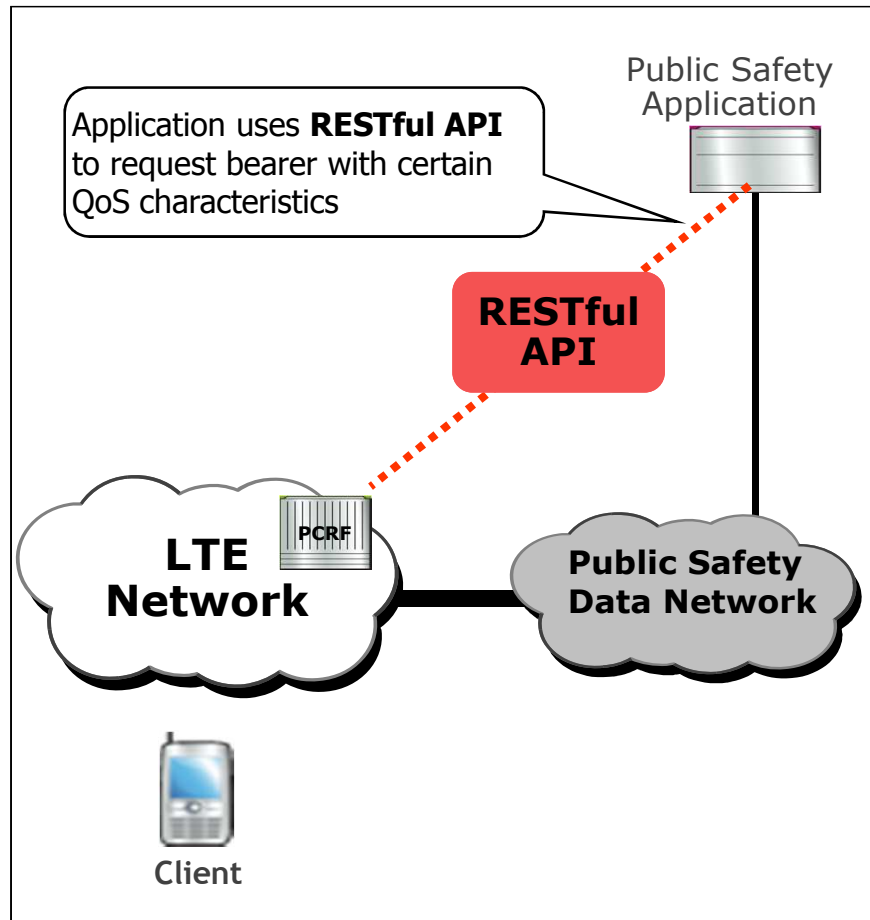
- Alcatel-Lucent sees the need for both Home-Routed and Local Breakout APNs for public safety users
 - Home routed supports access to various databases
 - Local breakout required for IMS applications and access to local databases/incident information
- Leverage 3rd party clearing house/IPX
- Introducing new terminology for intra-system roamers is not beneficial and does not align with 3GPP standards

** in the context of multiple networks*

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Need for Standardized Applications APIs



GSMA OneAPI is standardizing RESTful API

- V1.0, available, covers:
 - SMS
 - MMS
 - Terminal location
 - ...
- V2.0, targeted end 2010, covers:
 - Terminal status
 - Click to call
 - Call notification
 - Device capabilities
 - Presence
 - ...
- V3.0, targeted 2011, covers:
 - QoS for video streaming (QoS, ARP)
 - ...

Summary

- Decision on single network or network of networks critical to success of a nationwide Public Safety broadband network
 - Charter a Team to study the question
 - Stakeholders include the public safety community at large, early-waiver recipients and the vendor community
 - Should drive to resolution quickly
- Application Programming Interface key to end-to-end interoperability between public safety LTE networks and public safety applications

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